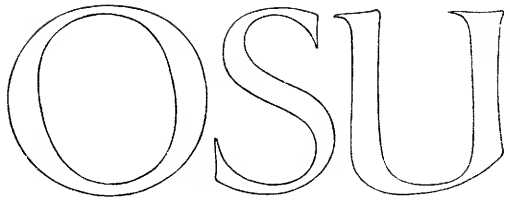
CC 68-21

A Control Mode Manual for OS-3
Version 2.0

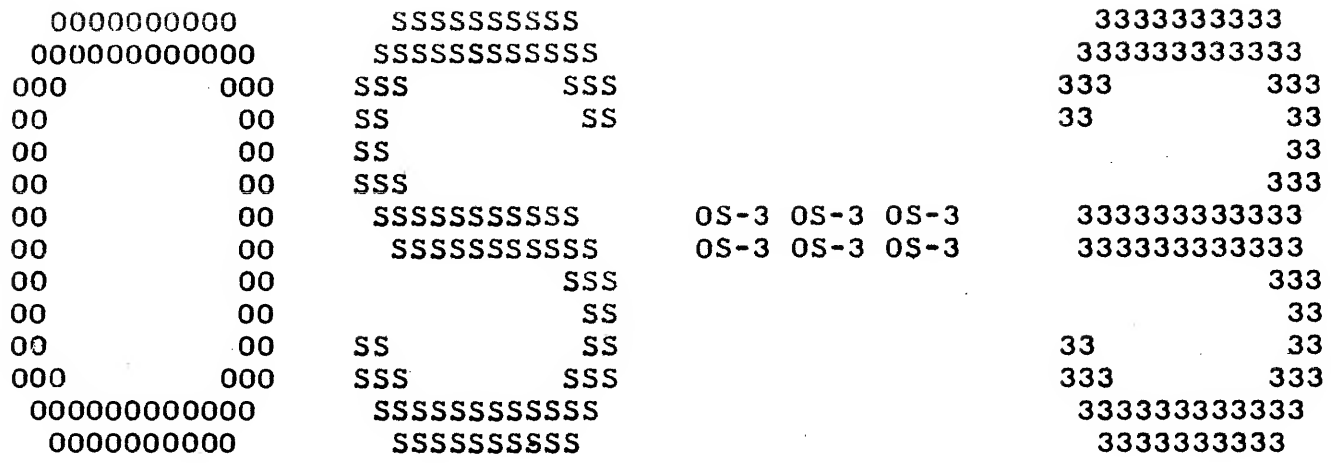
by Walter W. Massie

June, 1968



COMPUTER CENTER
Oregon State University
Corvallis, Oregon 97331

A CONTROL MODE MANUAL FOR



VERSION 2.0

OREGON STATE OPEN SHOP OPERATING SYSTEM

BY

WALTER W. MASSIE

JUNE 1968

CC - 68 - 21

A BRIEF INTRODUCTION TO OS-3

OS-3 IS REALLY A SHORTHAND FORM OF OSOSOS. THIS IS AN ACRONYM FOR OREGON STATE OPEN SHOP OPERATING SYSTEM. THE ENTIRE SYSTEM IS BEING DEVELOPED BY THE STAFF OF THE OREGON STATE UNIVERSITY COMPUTER CENTER. SINCE EACH USER HAS EXTREME FLEXIBILITY IN HIS CHOICE OF COMMANDS AND IS TOTALLY INDEPENDENT, THIS IS REFERRED TO AS AN OPEN SHOP OPERATING SYSTEM. AN OPERATING SYSTEM IS REALLY LITTLE MORE THAN A COMPUTER PROGRAM WHICH PERFORMS MANY OF THE TASKS WHICH A HUMAN COMPUTER OPERATOR WOULD BE CALLED UPON TO PERFORM.

OS-3 UTILIZES THE CONTROL DATA CORPORATION 3300 COMPUTER LOCATED IN KIDDER HALL ON THE OSU CAMPUS. THIS COMPUTER CURRENTLY INCLUDES ABOUT 65000 WORDS OF MEMORY, WITH MAGNETIC DISKS FOR ADDITIONAL INFORMATION STORAGE. INPUT MAY BE PRESENTED TO THE COMPUTER FROM A 1200 CARD/MINUTE READER, MAGNETIC TAPE, OR REMOTE TELETYPES. OUTPUT MAY BE PUNCHED ON CARDS, PRINTED ON A HIGH SPEED LINE PRINTER, PLOTTED ON AN X-Y PLOTTER, WRITTEN ON MAGNETIC TAPE, OR LISTED ON A REMOTE TELETYPE. USERS MAY ALSO STORE INFORMATION SEMI-PERMANENTLY ON THE MAGNETIC DISKS, IF DESIRED.

OS-3 IS A TIME SHARING SYSTEM. THIS MEANS THAT MANY USERS MAY BE USING THE COMPUTER SIMULTANEOUSLY WITH EACH USER HAVING THE IMPRESSION THAT HE, ALONE, HAS THE ENTIRE COMPUTER FACILITY AT HIS DISPOSAL. THIS IS ACCOMPLISHED BY TIME SLICING. THIS TECHNIQUE INVOLVES ALLOWING EACH USER TO UTILIZE ALL NECESSARY FACILITIES FOR A TIME INTERVAL OF ABOUT 100 MILLISECONDS ON A "ROUND ROBIN" BASIS. ONLY THE PORTION OF A USER'S PROGRAM WHICH IS NEEDED FOR A PARTICULAR 100 MILLISECOND TIME SLICE IS ACTUALLY IN THE COMPUTER MEMORY AT THAT TIME; THE REMAINDER OF THE PROGRAM IS STORED ON THE MAGNETIC DISKS.

OS-3 IS VERY FLEXIBLE IN OPERATION. DIFFERENT USERS MAY BE DOING ENTIRELY INDEPENDENT JOBS. PROGRAMS MAY BE ENTERED, COMPILED, AND EXECUTED IN EITHER ALGOL OR FORTRAN AT THE SAME TIME AS ANOTHER USER IS ASSEMBLING COMPASS, THE 3300 ASSEMBLY LANGUAGE. OTHER FEATURES AVAILABLE CONCURRENTLY WITH THOSE ABOVE INCLUDE:

EDIT - A TEXT EDITOR AVAILABLE TO REMOTE TELETYPE USERS WHICH ALLOWS GENERATION AND MODIFICATION OF MOST ANY FORM OF TEXT, INCLUDING SOURCE PROGRAMS AND DATA. THE EDITOR CAN READ AND PUNCH PAPER TAPE FOR REMOTE TELETYPE USERS. THIS ENTIRE MANUAL WAS GENERATED REMOTELY USING THIS TEXT EDITOR.

LOAD - A ROUTINE TO LOAD ANY MACHINE LANGUAGE (OBJECT) PROGRAM INTO THE COMPUTER FOR USE.

OSCAR - OREGON STATE CONVERSATIONAL AID TO RESEARCH. OSCAR IS AVAILABLE TO REMOTE TELETYPE USERS; IT IS TRULY CONVERSATIONAL IN THAT INSTRUCTIONS GIVEN TO IT ARE INTERPRETED AND EXECUTED IMMEDIATELY. THE LANGUAGE HAS MANY POWERFUL FEATURES INCLUDING VARIABLE PRECISION ALLOWING UP TO 50 DECIMAL DIGIT ACCURACY, IF DESIRED. OSCAR IS CURRENTLY OPERATIONAL, BUT NEW FEATURES ARE BEING IMPLEMENTED CONTINUOUSLY.

RADAR - AN ON LINE DE-BUGGING AID AVAILABLE TO REMOTE USERS. RADAR ALLOWS USERS TO INTERRUPT, EXAMINE IN ASSEMBLY LANGUAGE, MODIFY, AND RESUME THE OPERATION OF ANY RUNNING PROGRAM; THIS ROUTINE CAN BE VERY POWERFUL FOR FINDING LOGIC ERRORS IN COMPLEX PROGRAMS. RADAR WAS DEVELOPED BY THE OSU COMPUTER CENTER STAFF.

OS-3 CAN HANDLE TWO TYPES OF USERS. JOBS MAY BE SUBMITTED EITHER REMOTELY, VIA TELETYPE, OR IN A BATCH PROCESSING FORM VIA THE CARD READER IN THE COMPUTER CENTER. BOTH OF THESE TYPES OF OPERATIONS MAY GO ON SIMULTANEOUSLY.

OS-3 CONTROL MODE INSTRUCTIONS

INSTRUCTIONS MAY BE GIVEN TO THE OS-3 OPERATING SYSTEM WHENEVER THE COMPUTER IS IN CONTROL MODE.
CONTROL MODE IS INDICATED ON THE TELETYPES BY THE POUND SIGN (#) PRINTED AT THE LEFT HAND MARGIN OF THE TELETYPE PAGE.
CONTROL MODE INSTRUCTIONS FROM THE CARD READER ARE INDICATED BY THE DIGITS 7 AND 8 BOTH PUNCHED IN CARD COLUMN 1.

ANY TIME THAT A USER AT A TELETYPE WISHES TO GET TO CONTROL MODE, HE MAY DO SO BY DEPRESSING [CS,A]. THE PRINTER CARRIAGE WILL RETURN, LINE SPACE, AND PRINT #.

ALL CONTROL MODE INSTRUCTIONS EXECUTED BY BATCH JOBS ARE LISTED ON LOGICAL UNIT 61 AS THEY ARE EXECUTED.

ONLY CARD COLUMNS 1 THROUGH 72 ARE EXAMINED FOR CONTROL MODE INSTRUCTIONS SUBMITTED FROM BATCH JOBS. HOWEVER, THE ENTIRE 80 COLUMNS OF THE CARD ARE PRINTED.

THE OS-3 CONTROL MODE INSTRUCTIONS ARE PRESENTED IN ALPHABETICAL ORDER IN THIS MANUAL.

THE FOLLOWING INFORMATION IS COMMON TO ALL CONTROL MODE INSTRUCTIONS:

TO GET TO THE CONTROL MODE FROM ANY OTHER MODE, OR TO VERIFY THAT ONE'S TELETYPE IS IN THE CONTROL MODE, DEPRESS [CS,A].

ALL CONTROL MODE INSTRUCTIONS ENTERED FROM A TELETYPE MUST BE FOLLOWED BY A CARRIAGE RETURN [CR].

UNLESS OTHERWISE NOTED IN THE MANUAL, ALL CONTROL MODE COMMANDS MAY BE GIVEN BY EITHER REMOTE TELETYPE OR BATCH USERS.

WHENEVER THE COMPUTER IS READY FOR THE USER TO ENTER ANOTHER CONTROL MODE INSTRUCTION, THE PRINTER WILL LINESPACE AND AGAIN PRINT # AT THE LEFT HAND MARGIN.

TO IGNORE AN INVALID OR UNDESIRED CONTROL MODE INSTRUCTION, DEPRESS [CS,A] INSTEAD OF [CR]. THE TELETYPE WILL RESPOND WITH A LINESPACE AND # PRINTED AT THE LEFT MARGIN.

ALL CONTROL MODE INSTRUCTIONS MUST BE ENTERED EITHER FROM PUNCHED CARDS OR THE TELETYPE KEYBOARD. NO CONTROL MODE COMMANDS MAY BE ENTERED FROM PAPER TAPE.

IF THE USER ENTERS AN INVALID CONTROL MODE INSTRUCTION, AN ATTEMPT IS MADE TO OVLOAD THE FILE NAMED. IF THE FILE DOES NOT EXIST OR IS NOT IN PROPER FORM, THEN AN ILLEGAL CONTROL STATEMENT MESSAGE IS PRINTED.

JOB INITIALIZATION VIA TELETYPE

THE FOLLOWING PROCEDURE SHOULD BE USED TO INITIALIZE REMOTE USE FROM A TELETYPE USING OS-3.

1. TURN THE TELETYPE POWER SWITCH TO THE ON LINE POSITION. IF THE TELETYPE CHATTERS OUT OF CONTROL, THEN THE TELETYPE HAS BEEN DISCONNECTED AT THE COMPUTER CENTER. IF THIS OCCURS, SHUT OFF THE TELETYPE, CALL THE COMPUTER CENTER 3300 OPERATOR IN KIDDER HALL ROOM 128 AND ASK TO HAVE YOUR TELETYPE CONNECTED. BE SURE TO SPECIFY WHICH TELETYPE YOU WISH TO USE. AFTER A FEW MINUTES PAUSE, AGAIN TURN THE TELETYPE POWER SWITCH TO THE ON LINE POSITION.

2. DEPRESS [CS,A]; THE TELETYPE SHOULD RESPOND BY PRINTING A POUND SIGN (#) AT THE LEFT MARGIN OF A NEW LINE.

3. ENTER YOUR JOB NUMBER AND USER NUMBER SEPARATED BY A COMMA BUT NO SPACES; FOLLOW YOUR USER NUMBER WITH A CARRIAGE RETURN [CR]. FOR EXAMPLE:
   12345,3751[CR]

4. IF THE NUMBERS WERE VALID, THE TELETYPE WILL OVERPRINT THESE NUMBERS SO THAT THEY ARE UNREADABLE, AND THEN ENTER THE CONTROL MODE FOR THE NEXT COMMAND. IF THE NUMBERS WERE INVALID, AN APPROPRIATE ERROR MESSAGE WILL BE PROVIDED.

JOB INITIALIZATION VIA CARDS (BATCH)

THE FIRST CARD OF ANY BATCH JOB SUBMITTED TO THE COMPUTER CENTER SHOULD BE A JOB CARD AS INDICATED UNDER THAT HEADING UNDER CONTROL MODE INSTRUCTIONS. THIS CARD WITH THE USER NUMBER BLANKED OUT WILL BE PRINTED AS THE FIRST LINE OF OUTPUT ON LOGICAL UNIT 61. ALL JOB CARDS SHOULD HAVE SOME USER IDENTIFICIATION FOLLOWING THE USER NUMBER. FOR EXAMPLE:

JOB,12345,3751, Q. E. BASTIEN.

ALGOL,A=(LUN),I=(LUN),L=(LUN),P=(LUN),X=(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES THE COMPUTER TO LOAD THE ALGOL COMPILER. CONTROL IS PASSED TO THIS ALGOL COMPILER. FOR EACH OF THE PARAMETERS DESCRIBED BELOW, ANY GROUP OF LETTERS MAY BE SUBSTITUTED FOR THE SINGLE LETTER SHOWN TO THE LEFT OF THE EQUAL SIGN. THE FIRST LETTER OF THE GROUP MUST BE AS SHOWN BELOW, HOWEVER.

A=(LUN) THIS SPECIFIES THAT AN ASSEMBLY LANGUAGE LISTING OF THE PROGRAM IS TO BE PREPARED AND SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 61 IS ASSUMED UNLESS A (LUN) IS SPECIFIED IN THE L PARAMETER.

I=(LUN) THIS SPECIFIES THAT THE INPUT TO THE ALGOL COMPILER IS TO COME FROM THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, (LUN) 60 IS ASSUMED. THE LOGICAL UNIT NUMBER IN THIS PARAMETER MAY BE REPLACED BY THE NAME OF A SAVED FILE. INPUT LOGICAL UNITS ARE REWOUND, IF POSSIBLE, BY THE ALGOL COMPILER BEFORE READING. A SAVED FILE NAME MAY BE SUBSTITUTED FOR THE LOGICAL UNIT NUMBER WITH THIS PARAMETER.

L=(LUN) THIS SPECIFIES THAT A LISTING OF THE SOURCE PROGRAM IS TO BE SENT TO THE LOGICAL UNIT LISTED. (LUN) 61 IS ASSUMED IF NO (LUN) IS SPECIFIED BY THE USER.

P=(LUN) THIS FUNCTIONS EXACTLY AS X, EXCEPT THAT (LUN) 62 IS ASSUMED IF NO (LUN) IS SPECIFIED.

X=(LUN) THIS SPECIFIES THAT THE OUTPUT FROM THE ALGOL COMPILER (BINARY OBJECT PROGRAM) SHOULD BE SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 56 IS ASSUMED.

ALL LOGICAL UNITS SPECIFIED IN THE ALGOL CONTROL MODE INSTRUCTION MUST HAVE BEEN PREVIOUSLY DEFINED BY THE USER. ANY OF THE PARAMETERS, A,I,L,P,X, MAY BE OMITTED; THE DESIRED ONES MAY BE LISTED IN ANY ORDER. ONLY THE MOST COMMON ALGOL PARAMETERS ARE LISTED ABOVE; OTHERS ARE DISCUSSED IN THE ALGOL MANUAL.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF ALGOL CONTROL MODE INSTRUCTIONS ARE:

```
ALGOL,I=45,L=67,P=89,A=91[CR]

ALGOL,L,X[CR]

ALGOL,INPUT=33,A=61,X=3,L=47[CR]

ALGOL,I=TEST,L,X[CR]
```

AUTOLOAD,(LUN)[CR]

THE AUTOLOAD CONTROL MODE INSTRUCTION CAUSES A SINGLE RECORD TO BE READ INTO THE COMPUTER STARTING AT MEMORY LOCATION ZERO. THIS BINARY RECORD MAY BE ANY LENGTH WHICH WILL FIT INTO THE COMPUTER MEMORY. AFTER THE BINARY RECORD IS LOADED, CONTROL IS TRANSFERRED TO MEMORY LOCATION ZERO. IF NO (LUN) IS SPECIFIED IN THE AUTOLOAD COMMAND, THEN LOGICAL UNIT Ø IS ASSUMED. THE (LUN) IS REWOUND, IF POSSIBLE, BEFORE LOADING. THIS COMMAND WILL NOT LOAD NORMAL FORTRAN PROGRAMS.

A SAVED FILE NAME MAY SUBSTITUTED FOR THE LOGICAL UNIT NUMBER WITH THIS CONTROL MODE COMMAND.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF AUTOLOAD CONTROL MODE INSTRUCTIONS ARE:

AUTOLOAD,31[CR]

AUTOLOAD[CR]

AUTOLOAD,TEST[CR]

BACKSPACE,(LUN),(LUN),...,(LUN)[CR]

THIS COMMAND CAUSES EACH OF THE LOGICAL UNITS LISTED TO BACK UP ONE LINE. IF THE LOGICAL UNIT HAPPENED TO BE REWOUND, THEN THIS COMMAND WILL CAUSE AN ERROR. EACH OF THE LOGICAL UNITS LISTED IN THE BACKSPACE COMMAND MUST HAVE BEEN PREVIOUSLY DEFINED. AFTER THE EXECUTION OF A BACKSPACE COMMAND, CONTROL RETURNS TO THE OS-3 CONTROL MODE. A LOGICAL UNIT MAY BE LISTED MORE THAN ONCE; THE (LUN) WILL BACKSPACE ONCE FOR EACH TIME IT IS LISTED.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF BACKSPACE COMMANDS ARE:

BACKSPACE,23,89,90,71[CR]

BACKSPACE,23[CR]

BACKSPACE,34,34,34[CR]

BKSP,(LUN),(LUN),...(LUN)[CR]

THIS IS AN ALTERNATE FORM OF THE BACKSPACE CONTROL MODE INSTRUCTION.

EXAMPLES OF BKSP CONTROL MODE INSTRUCTIONS ARE:

BKSP,65,31[CR]

BKSP,23[CR]

BKSP,34,34,34,34[CR]

BKSPACE,(LUN),(LUN),...,(LUN)[CR]

THIS IS AN ALTERNATE FORM OF THE BACKSPACE CONTROL MODE INSTRUCTION.

EXAMPLES OF BKSPACE COMMANDS ARE:

BKSPACE,31,2[CR]

BKSPACE,26[CR]

BKSPACE,34,34,34[CR]

BREAK[CR]

THIS CONTROL MODE INSTRUCTION WILL CAUSE A JUMP TO THE RADAR COMMAND MODE WITHOUT DESTROYING THE STATUS OF THE PROGRAM WHICH HAS BEEN MANUALLY INTERRUPTED BY THE USER DEPRESSING [CS,A]. THIS COMMAND MAY BE USED ONLY WITH PROGRAMS WHICH HAVE BEEN ENTERED USING A LOAD COMMAND OR RADAR.

THIS INSTRUCTION MAY BE GIVEN ONLY FROM REMOTE TELETYPES.

AN EXAMPLE OF A BREAK INSTRUCTION IS:

BREAK[CR]

CLEAR,(LUN),(LUN),...(LUN)[CR]

THE CLEAR CONTROL MODE INSTRUCTION WILL RESET CERTAIN INDICATORS ASSOCIATED WITH EACH OF THE LOGICAL UNITS LISTED. THE INDICATORS WHICH ARE RESET INCLUDE:

FILE MARK JUST READ

REVERSE READ SET

BINARY RECORD PROCESSED

PARITY ERROR

THE FOLLOWING INDICATORS ARE NOT CHANGED:

FILE PROTECT

LOAD POINT

END OF DATA

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF CLEAR INSTRUCTIONS ARE:

CLEAR,33,99,71[CR]

CLEAR,26[CR]

COMPASS,D=(LUN),I=(LUN),L=(LUN),M=(LUN),P=(LUN),R=(LUN),
S=(LUN),X=(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES THE COMPUTER TO CALL FOR AND LOAD THE COMPASS ASSEMBLER. CONTROL IS PASSED TO THIS COMPASS ASSEMBLER PROGRAM. FOR EACH OF THE PARAMETERS DESCRIBED BELOW, ANY GROUP OF LETTERS MAY BE SUBSTITUTED FOR THE SINGLE LETTER SHOWN TO THE LEFT OF THE EQUAL SIGN. THE FIRST LETTER OF THE GROUP MUST BE AS SHOWN BELOW, HOWEVER.

D=(LUN) THIS PARAMETER SPECIFIES THAT A SHORT FORM OF DIAGNOSTIC MESSAGES WILL BE SENT TO THE (LUN) SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN LOGICAL UNIT 61 IS ASSUMED.

I=(LUN) THIS SPECIFIES THAT THE INPUT TO THE COMPASS ASSEMBLER IS TO COME FROM THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 60 IS ASSUMED. A SAVED FILE NAME MAY BE SUBSTITUTED FOR (LUN) WITH THIS PARAMETER.

L=(LUN) THIS SPECIFIES THAT A LISTING OF THE SOURCE PROGRAM IS TO BE PREPARED ON THE (LUN) SPECIFIED. IF NO (LUN) IS ASSIGNED, (LUN) 61 IS ASSUMED.

M=(LUN) THIS INDICATES THAT THE LIBRARY OF COMPASS MACRO INSTRUCTIONS WILL BE FOUND ON THE (LUN) INDICATED. A LOGICAL UNIT MUST BE SPECIFIED WHEN THIS PARAMETER IS USED.

P=(LUN) THIS SPECIFIES THAT THE OUTPUT (BINARY OBJECT PROGRAM) FROM THE COMPASS ASSEMBLER SHOULD BE SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN LOGICAL UNIT 62 IS ASSUMED.

R=(LUN) THIS INSTRUCTS THE COMPASS ASSEMBLER TO PREPARE A CROSS REFERENCE LIST OF SYMBOLS AND SEND IT TO THE (LUN) SPECIFIED OR TO THE SAME LOGICAL UNIT AS SPECIFIED IN L. IF L WAS NOT SPECIFIED, THEN LOGICAL UNIT 61 IS ASSUMED.

S=(LUN) THIS SPECIFIES THAT A SYMBOL TABLE IS TO BE PREPARED ON THE (LUN) SPECIFIED OR ON THE SAME LOGICAL UNIT AS SPECIFIED IN P. LOGICAL UNIT 62 IS ASSUMED IF P IS NOT INDICATED.

X=(LUN) THIS FUNCTIONS EXACTLY AS P ABOVE, EXCEPT THAT (LUN) 56 IS ASSUMED IF NO (LUN) IS SPECIFIED.

ANY OF THESE PARAMETERS, D,I,L,M,P,R,S,X, MAY BE OMITTED; THE DESIRED ONES MAY BE LISTED IN ANY ORDER. ALL LOGICAL UNITS SPECIFIED IN THE COMPASS CONTROL MODE INSTRUCTION MUST HAVE BEEN PREVIOUSLY DEFINED BY THE USER.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF COMPASS CONTROL MODE INSTRUCTIONS ARE:

```
COMPASS,I=23,P=49,X=97,L=12,R[CR]
COMPASS,IN=23,XEQ[CR]
COMPASS,L,R,X[CR]
COMPASS,IN=TEST,D,X[CR]
COMPASS,X[CR]
COMPASS,X,L=43,PUNCH=62,INPUT=2[CR]
COMPASS,IN=13,S=43,M=29,L,X[CR]
COMPASS,IN=TEST,L,X[CR]
```

COPY,I=(LUN),O=(LUN),S=(NUMBER),V[CR]

THE COPY COMMAND IS USED TO COPY THE INFORMATION FROM THE (LUN) SPECIFIED BY I ON THE LOGICAL UNIT SPECIFIED BY O. LOGICAL UNITS NUMBERED BETWEEN 50 AND 59 WILL BE REWOUND, IF POSSIBLE, BEFORE THIS COMMAND IS EXECUTED. A SAVED FILE NAME MAY BE SUBSTITUTED FOR THE LOGICAL UNIT NUMBER ASSOCIATED WITH I IN THIS COMMAND; THIS FILE WILL BE REWOUND BEFORE EXECUTION. A NAME MAY ALSO BE USED IN PLACE OF THE (LUN) ASSOCIATED WITH O.
IF THIS NAME REFERS TO A CURRENTLY SAVED FILE, THEN
THIS FILE WILL BE REWOUND AND USED. IF NOT, A NEW FILE WILL BE GENERATED AND SAVED. IF THE (LUN) FOR I IS OMITTED, THEN (LUN) 60 IS ASSUMED. LOGICAL UNIT 61 IS ASSUMED IF NO (LUN) IS SPECIFIED WITH O. IF (NUMBER) IS OMITTED, THE VALUE ZERO IS ASSUMED UNLESS O IS TO A LINE PRINTER OR TELETYPE IN WHICH CASE 1 IS ASSUMED. THE PARAMETER (NUMBER) WHEN MULTIPLIED BY FOUR WILL GIVE THE NUMBER OF SPACES WHICH THE OUTPUT IS SHIFTED TO THE RIGHT ON THE OUTPUT DEVICE. THE PARAMETER V, IF PRESENT, SPECIFIES THAT VARIABLE LENGTH LINES ARE TO BE WRITTEN.

ANY TYPE OF INFORMATION MAY BE HANDLED BY A COPY COMMAND. THE MAXIMUM LENGTH OF A LINE WHICH MAY BE COPIED IS ABOUT 240,000 CHARACTERS.

ANY GROUP OF LETTERS MAY BE SUBSTITUTED FOR EACH OF THE PARAMETERS, I, O, S, V, SHOWN ABOVE; THE FIRST LETTER OF EACH GROUP MUST BE AS SHOWN ABOVE, HOWEVER. THE PARAMETERS MAY BE LISTED IN ANY ORDER; ANY MAY BE OMITTED.

IF THE (LUN) ASSOCIATED WITH THE O PARAMETER IS UNDEFINED, IT WILL AUTOMATICALLY BE EQUIPPED AS A FILE.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED BY A GO COMMAND.

EXAMPLES OF COPY COMMANDS ARE:

```
COPY,I=34,S=1[CR]
COPY,IN=45,OUT=6,SHIFT=3,VAR[CR]
COPY,IN=WALT,OUT=TEST[CR]
COPY[CR]
```

COSY,I=(LUN),L=(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES THE COMPUTER TO CALL FOR AND LOAD THE COSY PROCESSOR PROGRAM. CONTROL IS PASSED TO THIS COSY PROCESSOR. FOR EACH OF THE PARAMETERS DESCRIBED BELOW, ANY GROUP OF LETTERS MAY BE SUBSTITUTED FOR THE SINGLE LETTER SHOWN TO THE LEFT OF THE EQUAL SIGN. THE FIRST LETTER OF THE GROUP MUST BE AS SHOWN BELOW, HOWEVER.

I=(LUN) THIS SPECIFIES THAT THE INPUT TO THE COSY PROCESSOR IS TO COME FROM THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 60 IS ASSUMED.

L=(LUN) THIS SPECIFIES THAT THE OUTPUT FROM THE COSY PROCESSOR SHOULD BE SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS GIVEN, THEN (LUN) 61 IS ASSUMED.

ALL LOGICAL UNITS SPECIFIED IN THE COSY CONTROL MODE INSTRUCTION MUST HAVE BEEN PREVIOUSLY DEFINED BY THE USER.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF COSY CONTROL MODE INSTRUCTIONS ARE:

COSY,I=34,L=29[CR]

COSY,I,L[CR]

COSY,INPUT=73,LIST=2[CR]

DATE,(LUN)[CR]

THIS CONTROL MODE INSTRUCTION WILL CAUSE THE COMPUTER TO PRINT THE CURRENT DATE (MONTH, DAY AND YEAR) AS WELL AS THE CURRENT TIME (TO THE NEAREST MINUTE) ON THE (LUN) SPECIFIED. LOGICAL UNIT 61 IS ASSUMED IF NO (LUN) IS SPECIFIED. THIS INFORMATION CAN BE HANDY FOR DETERMINING WHAT SEQUENCE OF STEPS WERE PERFORMED WHEN MANY SEPARATE COMPUTER RUNS WERE USED TO MODIFY A PARTICULAR PROBLEM.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF DATE INSTRUCTIONS ARE:

DATE,43[CR]

DATE[CR]

DELETE(NAME)[CR]

THE DELETE COMMAND IS USED TO DESTROY A SAVED FILE AT THE END OF THE CURRENT SESSION WITH THE COMPUTER. THE SAVED FILE MAY NOT BE FILE PROTECTED. THESE FILES MAY BE DELETED BY FIRST REMOVING THE FILE PROTECTION, AND THEN DELETING THEM. EVEN THOUGH A FILE HAS BEEN DELETED, THE USER MAY STILL REFER TO ITS INFORMATION BY THE (LUN) ASSIGNED TO IT IF IT WAS PREVIOUSLY EQUIPPED.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF DELETE COMMANDS ARE:

DELETE,PROGRAM[CR]

DELETE,DATA[CR]

DESTROY,(NAME),(NAME),...,(NAME)[CR]

THE DESTROY COMMAND IS USED TO TOTALLY WIPE OUT EACH OF THE FILES LISTED. NO PRIVATE FILE CAN BE PROTECTED FROM THIS COMMAND.

THIS INSTRUCTION MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF DESTROY CONTROL MODE INSTRUCTIONS ARE:

DESTROY,TEST,DATA,EDF[CR]

DESTROY,ESG[CR]

DUMP,(LUN),(STARTING ADDRESS),(ENDING ADDRESS)[CR]

THE DUMP COMMAND WILL CAUSE THE CONTENTS OF THE COMPUTER MEMORY TO BE SENT TO THE (LUN) SPECIFIED. THE (STARTING ADDRESS) AND (ENDING ADDRESS) ARE BOTH EXPRESSED IN OCTAL. IF THE (STARTING ADDRESS) AND (ENDING ADDRESS) ARE NOT SPECIFIED, THEN THE CONTENTS OF THE ENTIRE LOWER BANK OF MEMORY WILL BE DUMPED. IF THE (LUN) IS NOT SPECIFIED, (LUN) 61 IS ASSUMED. THE (LUN) USED IN THE DUMP COMMAND MUST HAVE BEEN PREVIOUSLY DEFINED. AFTER THE EXECUTION OF A DUMP COMMAND, CONTROL RETURNS TO THE OS-3 CONTROL MODE.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF CONTROL MODE DUMP COMMANDS ARE:

DUMP,34,13452,47233[CR]

DUMP[CR]

DUMP,,13452,47233[CR]

EDIT[CR]

THIS COMMAND CAUSES THE COMPUTER TO CALL FOR AND LOAD THE EDIT PROGRAM. CONTROL IS PASSED TO THE EDIT PROGRAM. NO PARAMETERS ARE ALLOWED IN THE EDIT COMMAND.

EDIT MAY BE USED TO PREPARE PROGRAM AND DATA FILES FOR USE BY OTHER PARTS OF THE COMPLETE OS-3 SYSTEM.

EDIT IS AVAILABLE TO TELETYPE REMOTE USERS ONLY.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

AN EXAMPLE OF AN EDIT COMMAND IS:

```
EDIT[CR]
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EQUIP,(LUN)=(ELEMENT)[CR]

THE EQUIP STATEMENT ALLOWS THE USER TO ASSOCIATE LOGICAL UNIT NUMBERS WITH PARTICULAR PIECES OF HARDWARE. THESE DEVICES ARE SUBSEQUENTLY REFERRED TO BY (LUN). THE (LUN), LOGICAL UNIT NUMBER, MUST BE AN INTEGER CONSTANT BETWEEN 0 AND 99. NORMALLY, THE FOLLOWING LOGICAL UNITS ARE ASSOCIATED WITH THE FOLLOWING DEVICES:

(LUN)	DEVICE
60	STANDARD INPUT
61	STANDARD OUTPUT

MOST PROGRAMMING LANGUAGES ALSO USE OTHER LOGICAL UNITS NUMBERED BETWEEN 54 AND 61, THEREFORE, A USER MAY NOT NORMALLY USE THESE LOGICAL UNITS.

LOGICAL UNIT 100 IS PERMANENTLY ASSIGNED TO THE USER'S STANDARD INPUT UNIT. IT MAY APPEAR ONLY ON THE RIGHT HAND SIDE OF THE EQUAL SIGN (=) IN AN EQUIP INSTRUCTION.

FOR REMOTE USERS, STANDARD INPUT AND STANDARD OUTPUT BOTH REFER TO THE USER'S TELETYPE. BATCH USERS HAVE THE CARD READER AS STANDARD INPUT AND THE LINE PRINTER AS STANDARD OUTPUT.

THE (ELEMENT) TO THE RIGHT OF THE EQUAL SIGN MUST BE A PREVIOUSLY DEFINED LOGICAL UNIT NUMBER (60, 61, 100, OR A (LUN) WHICH APPEARS TO THE LEFT OF THE EQUAL SIGN IN AN EARLIER EQUIP STATEMENT) OR ONE OF THE FOLLOWING:

FILE — THE WORD FILE IS USED TO SET A (LUN) AS A FILE STORAGE AREA. THIS STORAGE AREA MAY BE SAVED BY USING A SAVE COMMAND DESCRIBED BELOW. IF THE FILE IS NOT SAVED, IT WILL BE DESTROYED WHEN THE USER LOGS OFF, OR THE (LUN) IS UNEQUIPPED.

MT,(INFORMATION) — THE LETTERS MT ARE USED TO EQUIP A LUN EQUIVALENT TO A MAGNETIC TAPE. MAGNETIC TAPE MAY BE USED BY JOBS SUBMITTED FROM CARDS ONLY. THE (INFORMATION) IS PRINTED ON THE COMPUTER CONSOLE TO INDICATE TO THE OPERATOR WHICH MAGNETIC TAPE IS DESIRED. THIS INFORMATION WOULD INCLUDE THE TAPE REEL NUMBER, (USE 1 THROUGH 9 FOR A SCRATCH TAPE) AND WHETHER A WRITE RING IS TO BE REMOVED FROM THE REEL. ALSO, THE DENSITY OF INFORMATION ON THE TAPE (BITS PER INCH) SHOULD BE SPECIFIED.

(NAME) — THE (NAME) IS USED TO EQUIP A (LUN) EQUIVALENT TO THE FILE (NAME). (NAME) MAY BE THE NAME OF A PUBLIC FILE, OR THE NAME OF ONE OF THE USER'S PRIVATE FILES WHICH HE HAS PREVIOUSLY SAVED UNDER THE CURRENTLY USED ACCOUNT NUMBER AND USER NUMBER.

NULL — THE WORD NULL IS USED TO EQUIP A DEVICE WHICH WILL DESTROY ANY INFORMATION SENT TO IT. IT MAY BE THOUGHT OF AS A LINE PRINTER FEEDING DIRECTLY INTO AN INCINERATOR.

PLOT — THE WORD PLOT IS USED TO DEFINE A LOGICAL UNIT NUMBER EQUIVALENT TO AN X-Y PLOTTER. INFORMATION SENT TO THIS UNIT IN THE PROPER FORM WILL BE PLOTTED ON PAPER IN THE COMPUTER ROOM.

PR
LP — THE LETTERS PR OR THE LETTERS LP ARE USED TO EQUIP A LINE PRINTER AS AN OUTPUT DEVICE. ANY INFORMATION SENT TO THIS (LUN) WILL BE PRINTED ON THE HIGH SPEED LINE PRINTER IN THE COMPUTER ROOM.

PUN — THE LETTERS PUN ARE USED TO EQUIP A CARD PUNCH AS AN OUTPUT DEVICE. INFORMATION SENT TO THIS (LUN) WILL BE PUNCHED ON CARDS IN THE COMPUTER ROOM.

ONLY A SINGLE (LUN) MAY BE EQUIPPED IN EACH EQUIP STATEMENT. AFTER EXECUTION OF AN EQUIP STATEMENT, THE TELETYPE WILL RETURN TO CONTROL MODE FOR ANOTHER INSTRUCTION. A PARTICULAR (LUN) MAY NOT BE USED ON THE LEFT OF THE EQUAL SIGN IN AN EQUIP STATEMENT MORE THAN ONCE. IF ONE WISHES TO REDEFINE A (LUN) HE MUST UNEQUIP IT FIRST.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF EQUIP COMMANDS ARE:

```
EQUIP,04=FILE[CR]

EQUIP,02=61[CR]

EQUIP,63=FTNLIB[CR]

EQUIP,45=04[CR]

EQUIP,31=PR[CR]

EQUIP,99=NULL[CR]

EQUIP,71=PLOT[CR]

EQUIP,43=MT,1017,READ ONLY,800BPI

EQUIP,77=100[CR]
```

FORTRAN,A=(LUN),C=(LUN),D=(LUN),H=(LUN),I=(LUN),K=(NUMBER),L=(LUN),
P=(LUN),R=(LUN),S=(LUN),X=(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES THE COMPUTER TO LOAD THE FORTRAN COMPILER. CONTROL IS PASSED TO THIS FORTRAN COMPILER. FOR EACH OF THE PARAMETERS DESCRIBED BELOW, ANY GROUP OF LETTERS MAY BE SUBSTITUTED FOR THE SINGLE LETTER SHOWN TO THE LEFT OF THE EQUAL SIGN. THE FIRST LETTER OF THE GROUP MUST BE AS SHOWN BELOW, HOWEVER.

A=(LUN) THIS SPECIFIES THAT AN ASSEMBLY LANGUAGE LISTING OF THE PROGRAM IS TO BE PREPARED AND SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 61 IS ASSUMED UNLESS A (LUN) IS SPECIFIED IN THE L PARAMETER.

C=(LUN) THIS PARAMETER SPECIFIES THAT COMPASS ASSEMBLY LANGUAGE STATEMENTS EQUIVALENT TO THE FORTRAN ARE TO BE GENERATED ON THE LOGICAL UNIT SPECIFIED. IF NO LOGICAL UNIT IS SPECIFIED, THEN (LUN) 62 IS ASSUMED.

D=(LUN) THIS SPECIFIES THAT THE DIAGNOSTIC ERROR MESSAGES ARE TO BE SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED THEN THE (LUN) LISTED WITH THE L PARAMETER IS ASSUMED. IF L IS MISSING, THEN (LUN) 61 IS ASSUMED.

H=(LUN) THIS SPECIFIES THAT A FORTRAN SOURCE DECK IS TO BE SENT TO THE (LUN) SPECIFIED. THIS DECK WILL BE IN STANDARD FORTRAN FORMAT. LOGICAL UNIT 62 IS ASSUMED IF NO (LUN) IS SPECIFIED.

I=(LUN) THIS SPECIFIES THAT THE INPUT TO THE FORTRAN COMPILER IS TO COME FROM THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, (LUN) 60 IS ASSUMED. THE LOGICAL UNIT NUMBER IN THIS PARAMETER MAY BE REPLACED BY THE NAME OF A SAVED FILE. INPUT LOGICAL UNITS ARE REWOUND, IF POSSIBLE, BY THE FORTRAN COMPILER BEFORE READING. INPUT UNITS NUMBERED BETWEEN 50 AND 59 ARE UNEQUIPPED AT THE END OF COMPILATION.

K=(NUMBER) THIS SPECIFIES THE TYPE OF CARD KEYPUNCH USED. IF (NUMBER) IS 029, THEN THE DECK WAS PUNCHED WITH IBM EXTENDED CODE USED BY THE IBM 360. IF (NUMBER) IS 026 OR IS OMITTED, THEN THE STANDARD MODEL 026 KEYPUNCH IS ASSUMED. IF (NUMBER) IS 027, THEN THE DECK IS ASSUMED TO CONTAIN CARDS PUNCHED ON BOTH 026 AND 029 KEYPUNCHES. INVALID 026 CODES WILL BE TRANSLATED AS 029 CODE. THIS OPTION SHOUD BE USED ONLY WITH SPECIAL CARD DECKS.

L=(LUN) THIS SPECIFIES THAT A LISTING OF THE SOURCE PROGRAM IS TO BE SENT TO THE LOGICAL UNIT LISTED. (LUN) 61 IS ASSUMED IF NO (LUN) IS SPECIFIED BY THE USER.

P=(LUN) THIS FUNCTIONS EXACTLY AS X, EXCEPT THAT (LUN) 62 IS ASSUMED IF NO (LUN) IS SPECIFIED.

R=(LUN) THIS SPECIFIES THAT A BINARY OBJECT PROGRAM SHOULD BE SENT TO THE (LUN) SPECIFIED. THIS LOGICAL UNIT IS RELEASED BEFORE COMPILATION. AFTER COMPILATION, THE PROGRAM WILL BE LOADED AND RUN. IF NO (LUN) IS SPECIFIED, THEN LOGICAL UNIT 56 IS ASSUMED.
THIS PARAMETER DIFFERS FROM X ONLY THAT A BINARY CODED DECIMAL RUN STATEMENT IS ADDED TO THE END OF THE OUTPUT, AND THE FILE IS AUTOMATICALLY LOADED AFTER COMPILATION.

S=(LUN) THIS INSTRUCTS THE FORTRAN COMPILER TO PREPARE A SYMBOL TABLE ON THE (LUN) SPECIFIED. IF NO (LUN) IS SPECIFIED THEN THE P (LUN) IS ASSUMED. IF P WAS NOT SPECIFIED THEN X IS ASSUMED.

X=(LUN) THIS SPECIFIES THAT THE OUTPUT FROM THE FORTRAN COMPILER (BINARY OBJECT PROGRAM) SHOULD BE SENT TO THE LOGICAL UNIT SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 56 IS ASSUMED.

ALL LOGICAL UNITS SPECIFIED IN THE FORTRAN CONTROL MODE INSTRUCTION MUST HAVE BEEN PREVIOUSLY DEFINED BY THE USER. ANY OF THE PARAMETERS, A,C,D,H,I,K,L,P,R,S,X, MAY BE OMITTED; THE DESIRED ONES MAY BE LISTED IN ANY ORDER.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF FORTRAN CONTROL MODE INSTRUCTIONS ARE:

```
FORTRAN,I=45,S=33,L=67,P=89,A=91[CR]
FORTRAN,L,X[CR]
FORTRAN,IN=TEST,RUN=47[CR]
FORTRAN,R,INPUT=TEST[CR]
FORTRAN,I=45,C=27,X,L=18,D=61,K=Ø27,S[CR]
FORTRAN,INPUT=33,A=61,X=3,L=47,D=61[CR]
FORTRAN,IN=TEST,X,H=37[CR]
```

FP,(LUN)[CR]

THE LETTERS FP ARE USED TO INDICATE FILE PROTECT. (LUN) MUST REFER TO A FILE. FILE PROTECTION PREVENTS THE USER FROM MODIFYING THE CONTENTS OF THE FILE ASSOCIATED WITH (LUN). INFORMATION MAY STILL BE READ FROM THE FILE. A PROTECTED FILE WHICH THE USER DOES NOT SAVE, WILL BE DESTROYED AT THE END OF HIS JOB. FILE PROTECTION MAY BE REMOVED BY USING THE RFP,(LUN) COMMAND.

THE NAME OF A CURRENTLY SAVED FILE MAY BE SUBSTITUTED FOR THE LOGICAL UNIT NUMBER IN THIS COMMAND.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF FILE PROTECT COMMANDS ARE:

FP,33[CR]

FP,45[CR]

FP,BURP[CR]

FWDSPACE,(LUN),(LUN),...,(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES EACH LOGICAL UNIT SPECIFIED TO BE SPACED FORWARD ONE LINE. IF A (LUN) IS ALREADY AT THE END OF A FILE OF INFORMATION, THEN THIS COMMAND WILL CAUSE AN ERROR. ANY NUMBER OF LOGICAL UNITS MAY BE LISTED; ALL MUST HAVE BEEN PREVIOUSLY DEFINED. A LOGICAL UNIT MAY BE LISTED MORE THAN ONCE; THE (LUN) WILL FORWARD SPACE ONCE FOR EACH TIME IT IS LISTED.

THIS CONTROL MODE INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF FORWARD SPACE COMMANDS ARE:

```
FWDSPACE,34,98,20,91[CR]
FWDSPACE,23,23,23[CR]
```

FWSP,(LUN),(LUN),...,(LUN)[CR]

THIS IS AN ALTERNATE FORM OF THE FWDSPACE COMMAND.

EXAMPLES OF THIS CONTROL MODE INSTRUCTION ARE:

```
FWSP,2,67,23[CR]
FWSP,41[CR]
FWSP,67,67,67,67,[CR]
```

GO[CR]

THE GO COMMAND IS USED TO RESUME COMPUTER OPERATION AFTER THE EXECUTION OF A PROGRAM HAS BEEN INTERRUPTED EITHER BY A PROGRAM ERROR WHICH THE USER HAS SINCE FIXED, OR BY THE USER HIMSELF BY DEPRESSING [BREAK] OR [CS,A]. EXECUTION RESUMES WHERE IT WAS TERMINATED. THE COMPUTER MUST BE IN THE CONTROL MODE WHEN THIS COMMAND IS GIVEN. THIS COMMAND IS OF MOST USE TO TELETYPE USERS. CONTROL MODE INSTRUCTIONS WHICH WILL PREVENT THE USER FROM RESTARTING A PROGRAM WITH THIS COMMAND ARE INDICATED INDIVIDUALLY.

AN EXAMPLE OF A GO COMMAND IS:

GO[CR]

JOB,(JOB NUMBER),(USER NUMBER),(USER IDENTIFICATION)

THIS CONTROL MODE INSTRUCTION IS USED TO INITIALIZE ALL BATCH JOBS SUBMITTED VIA THE CARD READER. THE (JOB NUMBER) IS ASSIGNED BY THE COMPUTER CENTER OR THE COURSE INSTRUCTOR. THE (USER NUMBER) IS USUALLY SELECTED BY THE INDIVIDUAL USER. THE COMBINATION OF THESE TWO NUMBERS IS USED BY THE COMPUTER BILLING ROUTINE TO IDENTIFY CHARGES FOR ACCOUNTING PURPOSES.

THE (USER NUMBER) MAY BE EITHER NUMERIC, OR IT MAY CONSIST OF UP TO 4 ALPHABETIC CHARACTERS.

THE (IDENTIFICATION) IS ANY DISTINCTIVE, IDENTIFYING INFORMATION WHICH THE USER SELECTS TO IDENTIFY HIS DECK SO THAT IT MAY BE RETURNED TO HIM BY THE COMPUTER CENTER STAFF.

THIS MUST BE THE FIRST CARD IN A BATCH JOB DECK; THIS INSTRUCTION IS INVALID FROM TELETYPES. REFER TO THE INTRODUCTION TO THE CONTROL MODE FOR INSTRUCTIONS ON HOW TO INITIALIZE A REMOTE JOB.

EXAMPLES OF JOB COMMANDS ARE:

JOB,12345,EES,SCHULTZ - PLACE IN BOX S

JOB,48360,1001,CIVIL ENGINEERING - GARY PARKS

LABEL,(LUN)/(MESSAGE)[CR]

THIS FORM OF LABEL COMMAND CAUSES THE (MESSAGE) SPECIFIED TO BE SENT TO THE (LUN) SPECIFIED. IF NO (LUN) IS SPECIFIED, THEN (LUN) 61 IS ASSUMED. A SINGLE SPACE WILL BE INSERTED BEFORE THE MESSAGE IF THE OUTPUT IS DIRECTED TO A PRINTING DEVICE. IF THE OUTPUT IS DIRECTED TO A PUNCH, THEN THE FIRST SIX CHARACTERS OF THE MESSAGE ARE PUNCHED IN THE CARD SUCH THAT THEY MAY BE READ WHEN THE CARD IS HELD TO THE LIGHT. IF (LUN) IS EQUIPPED AS AN X - Y PLOTTER, THEN THE (MESSAGE) IS WRITTEN ON THE PLOTTER PAPER IN LETTERS ABOUT ONE HALF INCH HIGH. THIS COMMAND MAY BE USED TO IDENTIFY THE USER'S OUTPUT AT THE COMPUTER CENTER.

FOR BATCH JOBS, LABELING OF LOGICAL UNIT 62 WITH THIS COMMAND WILL EQUIP A CARD PUNCH IF THE UNIT IS UNDEFINED.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF THIS FORM OF LABEL COMMAND ARE:

```
LABEL,71/HAR[CR]
LABEL/WWM2[CR]
```

LABEL,(LUN)'(MESSAGE)[CR]

THIS FORM OF THE LABEL COMMAND WILL SIMPLY OUTPUT THE (MESSAGE) SPECIFIED ON THE (LUN) INDICATED. IF NO (LUN) IS GIVEN, THEN LOGICAL UNIT 61 IS ASSUMED. THIS OUTPUT IS IN BINARY CODED DECIMAL (BCD) FORM.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF THIS FORM OF LABEL COMMAND ARE:

LABEL,20'WWM[CR]

LABEL' THE END[CR]

LIBEDIT,(LUN),(LUN),...,(LUN),LIB=(LUN),I=(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES THE COMPUTER TO LOAD THE LIBRARY EDITOR PROGRAM. THIS PROGRAM IS USED TO CREATE SUB-PROGRAM LIBRARIES FOR THE LOAD ROUTINE. THE LIBRARY IS CREATED ON THE LOGICAL UNIT LISTED AFTER THE PARAMETER LIB. IF NO (LUN) IS SPECIFIED, THEN LOGICAL UNIT 54 IS ASSUMED.

THE SUBPROGRAMS USED TO MAKE UP THE LIBRARY ARE TAKEN IN ORDER FROM THE LIST OF LOGICAL UNITS. AFTER THIS LIST HAS BEEN EXHAUSTED, THE STANDARD INPUT UNIT IS CHECKED FOR FURTHER ADDITIONS. THESES ARE PROCESSED UNTIL A BINARY CODED DECIMAL (BCD) RECORD IS ENCOUNTERED FROM THE STANDARD INPUT UNIT. THE STANDARD INPUT UNIT IS ASSUMED TO BE (LUN) 60 UNLESS OTHERWISE SPECIFIED BY THE USER WITH THE I PARAMETER.

ALL LOGICAL UNITS LISTED IN THE LIBEDIT COMMAND MUST HAVE BEEN PREVIOUSLY DEFINED IN EQUIP COMMANDS.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF LIBEDIT COMMAND ARE:

```
LIBEDIT,45,67,98,LIB=63[CR]
LIBEDIT,23,12,LIB=99[CR]
LIBEDIT,34[CR]
LIBEDIT,LIB=37,I=56[CR]
```

LOAD,(LUN),(LUN),...,(LUN),LIB=(LUN),I=(LUN)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES THE COMPUTER TO LOAD BINARY OBJECT PROGRAMS FROM THE LOGICAL UNITS LISTED AFTER THE WORD LOAD. THESE PROGRAMS, OR PARTS OF PROGRAMS, ARE LOADED IN THE ORDER SPECIFIED. AFTER READING PROGRAMS FROM ALL THE SPECIFIED UNITS, THE LOAD ROUTINE WILL ATTEMPT TO READ MORE BINARY PROGRAMS FROM THE STANDARD INPUT UNIT. IF NON-BINARY INFORMATION IS PRESENT ON THE STANDARD INPUT UNIT, THE LOAD ROUTINE WILL EXAMINE THE (LUN) SPECIFIED BY LIB FOR OTHER PARTS OF THE PROGRAM WHICH MAY BE NEEDED. IF NO (LUN) IS SPECIFIED IN LIB, THEN (LUN) 63 IS ASSUMED. THE STANDARD INPUT UNIT IS LOGICAL UNIT 60 UNLESS OTHERWISE SPECIFIED BY THE USER WITH THE I PARAMETER IN THIS COMMAND. WHEN THIS OPERATION IS FINISHED, THE LOADER WILL AGAIN RETURN TO THE STANDARD INPUT UNIT FOR THE NON-BINARY INSTRUCTION ALREADY THERE. THIS INSTRUCTION MUST BE ONE OF THE FOLLOWING:

FINIS[CR][LF] THE WORD FINIS FOLLOWED BY A CARRIAGE RETURN AND A LINE FEED IS USED TO TERMINATE THE LOADING OPERATION, IF DESIRED. CONTROL RETURNS TO THE OS-3 CONTROL MODE AFTER THIS STATEMENT IS PROCESSED.

MAP,(LUN)[CR][LF] THE WORD MAP FOLLOWED BY A CARRIAGE RETURN AND A LINE FEED INSTRUCTS THE LOADER TO PREPARE A LIST OF HOW THE PROGRAM OCCUPIES THE COMPUTER MEMORY ON THE (LUN) SPECIFIED. (LUN) 61 IS ASSUMED IF NO LOGICAL UNIT NUMBER IS SPECIFIED. AFTER THIS STATEMENT IS EXECUTED, THE COMPUTER WILL PREPARE TO RECEIVE A FINIS, RADAR, OR RUN STATEMENT.

RADAR[CR][LF] THE WORD RADAR FOLLOWED BY A CARRIAGE RETURN AND LINE FEED MAY BE USED TO CALL THE RADAR ROUTINE AS AN AID TO FINDING PROGRAM ERRORS. RADAR IS AVAILABLE ONLY TO TELETYPE USERS.

RUN[CR][LF] THE WORD RUN FOLLOWED BY A CARRIAGE RETURN AND LINE FEED TRANSFERS CONTROL TO THE PROGRAM WHICH HAS JUST BEEN LOADED. UPON EXECUTION OF THE PROGRAM, THE USER IS RETURNED TO OS-3 CONTROL MODE.

NO SPECIAL SYMBOL WILL BE PRINTED ON A TELETYPE, AND NO SPECIAL PUNCHINGS SHOULD BE USED ON A CARD BEFORE ANY OF THESE PARAMETERS. ALL LOGICAL UNITS USED IN THE LOAD COMMAND MUST HAVE BEEN PREVIOUSLY DEFINED.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF LOAD COMMANDS ARE:

```
LOAD,34,23,15,LIB=89[CR]
RUN[CR][LF]

LOAD,56[CR]
MAP,2[CR][LF]
RUN[CR][LF]

LOAD,37,39,LIB=27[CR]
FINIS[CR][LF]

LOAD,33,45,22,I=27[CR]

LOAD,I=56[CR]

LOAD,73[CR]
MAP[CR][LF]
FINIS[CR][LF]

LOAD,31,32,33[CR]
RADAR[CR][LF]
```

LOGOFF[CR]

THE LOGOFF COMMAND IS THE LAST COMMAND GIVEN TO THE COMPUTER BY A REMOTE USER. A LOGOFF COMMAND CAUSES ALL LOGICAL UNITS STILL EQUIPPED TO BE UNEQUIPPED.

AFTER THE USER TYPES THE LOGOFF COMMAND, THE COMPUTER WILL PRINT A SUMMARY OF HIS COMPUTER USE.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

AN EXAMPLE OF A LOGOFF COMMAND IS:

```
LOGOFF[CR]
```

LOGOUT[CR]

THIS CONTROL MODE INSTRUCTION IS INTERCHANGEABLE WITH THE LOGOFF COMMAND.

AN EXAMPLE OF A LOGOUT COMMAND IS:

```
LOGOUT[CR]
```

MFBLKS[CR]

THE LETTERS MFBLKS STAND FOR MAXIMUM FILE BLOCKS. THIS CONTROL MODE INSTRUCTION IS USED TO DETERMINE THE CURRENT MAXIMUM NUMBER OF FILE BLOCKS WHICH HAVE BEEN USED AS WELL AS THE CURRENT NUMBER OF SCRATCH FILE BLOCKS IN USE.

THIS COMMAND MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

AN EXAMPLE OF THIS MFBLKS CONTROL MODE INSTRUCTION IS:

```
MFBLKS[CR]
```

MFBLKS=(NUMBER)[CR]

THE LETTERS MFBLKS STAND FOR MAXIMUM FILE BLOCKS. THIS CONTROL MODE COMMAND MAY BE GIVEN TO DEFINE THE SIZE LIMIT FOR TEMPORARY FILE STORAGE. THIS LIMIT IS NORMALLY SET AT 100 FILE BLOCKS UNLESS THE USER REQUESTS OTHERWISE. THE (NUMBER) SPECIFIES THE NUMBER OF FILES BLOCKS THE USER WISHES TO SET AS A LIMIT.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

AN EXAMPLE OF MFBLKS INSTRUCTION IS:

```
MFBLKS=75[CR]
```

OSCAR[CR]

THIS CONTROL MODE INSTRUCTION CALLS THE OSCAR ROUTINE. AFTER THE ROUTINE IS LOADED INTO THE COMPUTER, CONTROL IS TURNED OVER TO OSCAR. THERE ARE NO PARAMETERS IN THE COMMAND.

OSCAR IS A CONVERSATIONAL LANGUAGE FOR USE WITH THE TELETYPES.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

AN EXAMPLE OF AN OSCAR CONTROL MODE INSTRUCTION IS:

OSCAR[CR]

OVLOAD,(LUN)[CR]

THE OVLOAD CONTROL MODE INSTRUCTION CAUSES A BINARY PROGRAM OVERLAY TO BE LOADED FROM THE (LUN) SPECIFIED. LOGICAL UNIT ZERO IS ASSUMED IF NO LUN IS SPECIFIED. THE (LUN) IS REWOUND, IF POSSIBLE, BEFORE LOADING. AFTER LOADING, CONTROL IS TRANSFERRED TO THE LOADED PROGRAM.

THE NAME OF A SAVED FILE MAY BE SUBSTITUTED FOR THE LOGICAL UNIT NUMBER WITH THIS COMMAND.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

EXAMPLES OF OVLOAD CONTROL MODE INSTRUCTIONS ARE:

OVLOAD,37[CR]

OVLOAD[CR]

OVLOAD,HENRY[CR]

RADAR[CR]

THIS CONTROL MODE INSTRUCTION CALLS AND LOADS THE RADAR ROUTINE. THIS PROGRAM MAY BE USED TO EXAMINE, SELECTIVELY TRACE, AND MAKE ON LINE CHANGES TO RUNNING PROGRAMS. NO PARAMETERS ARE ALLOWED AFTER THE WORD RADAR.

RADAR IS AVAILABLE TO REMOTE TELETYPE USERS ONLY.

THIS CONTROL MODE INSTRUCTION WILL DESTROY ANY INTERRUPTED PROGRAM SO THAT IT MAY NOT BE RESTARTED WITH A GO COMMAND.

AN EXAMPLE OF A RADAR CONTROL MODE INSTRUCTION IS:

RADAR[CR]

RELEASE,(LUN),(LUN),...,(LUN)[CR]

THE RELEASE COMMAND DESTROYS THE INFORMATION STORED ON EACH OF THE LOGICAL UNITS LISTED AND GIVES UP THE FILE SPACE THAT WAS USED. THE LOGICAL UNIT IS STILL DEFINED, HOWEVER.

THIS COMMAND MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF RELEASE COMMANDS ARE:

RELEASE,33,67,21[CR]

RELEASE,32[CR]

REWIND,(LUN),(LUN),...,(LUN)[CR]

THE REWIND COMMAND IS USED TO RETURN THE USER TO THE START OF THE LOGICAL UNITS SPECIFIED. ANY NUMBER OF LOGICAL UNITS MAY BE REWOUND USING A SINGLE COMMAND.

IF INFORMATION IS SENT TO A (LUN) WHICH HAS NOT BEEN REWOUND, THE ADDITIONAL INFORMATION IS ADDED TO THAT WHICH ALREADY EXISTS ON THE (LUN). ATTEMPTS TO READ INFORMATION FROM A (LUN) WHICH IS NOT REWOUND, WILL FAIL. ALL LOGICAL UNITS USED IN A REWIND COMMAND MUST HAVE BEEN PREVIOUSLY DEFINED AND MUST REFER TO EITHER A MAGNETIC TAPE OR A FILE.

THIS COMMAND MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF REWIND COMMANDS ARE:

```
REWIND,45,37,02,99[CR]
REWIND,02[CR]
```

RFP,(LUN)[CR]

THE LETTERS RFP ARE USED TO INDICATE REMOVE FILE PROTECT. REMOVE FILE PROTECT NEGATES THE EFFECT OF THE FILE PROTECT COMMAND. (LUN) MUST REFER TO A FILE.

AFTER FILE PROTECTION HAS BEEN REMOVED FROM A FILE, IT MAY BE MODIFIED AT THE USER'S OPTION. FILE PROTECTION MAY BE REMOVED ONLY FROM THE USER'S PRIVATE FILES.

THE NAME OF A CURRENTLY SAVED FILE MAY BE SUBSTITUTED FOR THE LOGICAL UNIT NUMBER WITH THIS CONTROL MODE INSTRUCTION.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF REMOVE FILE PROTECT COMMANDS ARE:

RFP,33[CR]

RFP,83[CR]

RFP,HESD[CR]

SAVE,(LUN)=(NAME)[CR]

THE SAVE COMMAND IS USED WHENEVER THE USER WISHES TO STORE FILE INFORMATION ON A SEMI-PERMANENT BASIS. (LUN) MUST REFER TO A FILE, THE NAME IS ASSIGNED BY THE USER. IF (LUN) WAS FILE PROTECTED, THE SAVED FILE IS ALSO FILE PROTECTED. TO RETRIEVE A SAVED FILE, THE USER MUST HAVE INITIALIZED USING EXACTLY THE SAME (JOB NUMBER) AND (USER NUMBER). HE SHOULD THEN EQUIP,(LUN)=(NAME)[CR]. THE NEW LOGICAL UNIT NUMBER IN THE EQUIP STATEMENT NEED NOT BE THE SAME AS THE (LUN) IN THE EARLIER SAVE COMMAND; THE NAMES MUST BE THE SAME, HOWEVER.

IT IS THE USER'S RESPONSIBILITY TO REMEMBER THE NAMES WHICH HE ASSIGNS TO HIS SAVED FILES.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF SAVE COMMANDS ARE:

SAVE,83=PROGRAM[CR]

SAVE,22=DATA[CR]

SBPFM,(LUN),(LUN),...,(LUN)[CR]

THIS CONTROL MODE INSTRUCTION WILL CAUSE EACH LOGICAL UNIT SPECIFIED TO BE SPACED BACKWARD UNTIL A FILE MARK IS PASSED, OR THE BEGINNING OF THE FILE IS FOUND. A FILE MARK MAY BE THOUGHT OF AS A MARK WHICH SEPARATES INDIVIDUAL SUBFILES ON THE SAME LOGICAL UNIT. EACH OF THE LOGICAL UNITS SPECIFIED MUST HAVE BEEN PREVIOUSLY DEFINED. A LOGICAL UNIT MAY BE LISTED MORE THAN ONCE; THE SEARCH BACK COMMAND WILL BE EXECUTED AS MANY TIMES AS THE (LUN) IS LISTED. ALL LOGICAL UNITS LISTED MUST REFER TO EITHER A MAGNETIC TAPE OR A FILE.

THIS CONTROL MODE INSTRUCTION WILL NOT DISRUPT THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF SEARC BACK PAST FILE MARK COMMANDS ARE:

SBPFM,23,09,78[CR]

SBPFM,89,89,89,34[CR]

SBPFM,33[CR]

SEFB,(LUN),(LUN),...,(LUN)[CR]

THIS IS AN ALTERNATE FORM OF THE SBPFM INSTRUCTION.

EXAMPLES OF SEFB CONTROL MODE INSTRUCTIONS ARE:

SEFB,21,33,76[CR]

SEFB,37[CR]

SEFB,29,29,29[CR]

SEFF,(LUN),(LUN),...,(LUN)[CR]

THIS CONTROL MODE INSTRUCTION WILL CAUSE EACH LOGICAL UNIT SPECIFIED TO BE SPACED FORWARD UNTIL A FILE MARK IS PASSED, OR THE END OF THE FILE IS FOUND. EACH OF THE LOGICAL UNITS SPECIFIED MUST HAVE BEEN PREVIOUSLY DEFINED. A LOGICAL UNIT MAY BE LISTED MORE THAN ONCE; THE SEARCH FORWARD COMMAND WILL BE EXECUTED AS MANY TIMES AS THE (LUN) IS LISTED. THIS COMMAND IS INVALID FOR LOGICAL UNITS WHICH CANNOT BE REWOUND.

THIS CONTROL MODE INSTRUCTION MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF THE SEFF CONTROL MODE INSTRUCTION ARE:

SEFF,39,73,21[CR]

SEFF,35[CR]

SEFF,26,26,26[CR]

SFPFM,(LUN),(LUN),...,(LUN)[CR]

THIS IS AN ALTERNATE FORM OF THE SEFF COMMAND.

EXAMPLES OF SEARCH FORWARD PAST FILE MARK COMMANDS ARE:

SFPFM,34,67,90,01[CR]

SFPFM,23,23,23[CR]

SFPFM,37[CR]

SFBLKS[CR]

THE LETTERS SFBLKS STAND FOR SAVED FILE BLOCKS. THIS CONTROL MODE INSTRUCTION CAUSES THE CURRENT NUMBER OF SAVED FILE BLOCKS IN USE TO BE PRINTED ALONG WITH THE SAVED FILE BLOCK LIMIT ASSOCIATED WITH THE PARTICULAR JOB NUMBER AND USER NUMBER COMBINATION. THE DIFFERENCE BETWEEN THE TWO VALUES LISTED IS THE REMAINING SPACE LEFT FOR THE STORAGE OF SAVED FILES.

THIS CONTROL MODE INSTRUCTION MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

AN EXAMPLE OF A SFBLKS CONTROL MODE INSTRUCTION IS:

SFBLKS[CR]

START,(ADDRESS)[CR]

THIS CONTROL MODE INSTRUCTION CAUSES A BRANCH TO THE (ADDRESS) SPECIFIED. CONTROL IS PASSED TO THE INSTRUCTION FOUND AT THAT (ADDRESS). THE (ADDRESS) MUST BE EXPRESSED AS A SIX OR FEWER DIGIT OCTAL NUMBER.

THIS CONTROL MODE INSTRUCTION MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM.

EXAMPLES OF START INSTRUCTIONS ARE:

START,71653[CR]

START,132014[CR]

START,0[CR]

STATUS[CR]

THE USER SHOULD TYPE THE COMMAND MODE INSTRUCTION STATUS WHENEVER IT APPEARS THAT THE COMPUTER HAS GONE COMPLETELY BERSERK AND THE USER IS LOST AS TO WHO OR WHAT WENT WRONG. THE COMPUTER WILL RESPOND BY TYPING A LIST OF INFORMATION WHICH MAY BE OF HELP TO THE COMPUTER STAFF TRYING TO EXPLAIN WHAT HAPPENED. THIS COMMAND IS AUTOMATICALLY EXECUTED IF A JOB SUBMITTED ON CARDS TERMINATES ABNORMALLY. THIS INSTRUCTION IS ENTIRELY DIFFERENT FROM A SIMILAR EDIT COMMAND.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

AN EXAMPLE OF A STATUS COMMAND IS:

STATUS[CR]

TIME[CR]

THE TIME COMMAND WILL CAUSE THE COMPUTER TO PRINT OUT THE TOTAL COMPUTER TIME USED AND THE MAXIMUM NUMBER OF FILE BLOCKS USED SINCE THE USER LAST INITIALIZED COMPUTER USE. THE NUMBER OF FILE BLOCKS CURRENTLY IN USE IS ALSO LISTED.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

AN EXAMPLE OF THIS TIME COMMAND IS:

TIME[CR]

TIME=(NUMBER)[CR]

THIS COMMAND SETS THE MAXIMUM COMPUTER TIME ALLOWED FOR THE EXECUTION OF A PARTICULAR JOB. THE TIME IN SECONDS IS SPECIFIED BY (NUMBER) IN THE TIME COMMAND. IF THE USER DOES NOT SPECIFY THIS TIME USING THIS FORM OF A TIME COMMAND, THE COMPUTER WILL ASSIGN A TIME LIMIT OF 60 SECONDS.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF THIS TIME COMMAND ARE:

TIME=15[CR]

TIME=200[CR]

TRAFFIC[CR]

THIS CONTROL MODE INSTRUCTION WILL CAUSE THE COMPUTER TO APPROXIMATE THE CURRENT SYSTEM LOAD FOR THE USER'S REFERENCE. THIS INFORMATION MAY BE USEFUL FOR JUDGING RESPONSE TIME AND FOR PREDICITING VARIABLE COSTS WHICH INCREASE AS THE SYSTEM LOAD INCREASES.

THIS COMMAND IS AVAILABLE TO REMOTE USERS ONLY.

THIS COMMAND MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

AN EXAMPLE OF A TRAFFIC COMMAND IS:

TRAFFIC[CR]

UNEQUIP,(LUN)[CR]

THE UNEQUIP STATEMENT CAUSE THE (LUN) SPECIFIED TO BE DELETED FROM THE AVAILABLE LOGICAL UNIT NUMBERS. IF (LUN) IS A FILE WHICH HAS NOT BEEN SAVED, ITS CONTENTS ARE DESTROYED. IF (LUN) IS A FILE WHICH HAS BEEN SAVED BY THE USER, THE DATA IS SAVED.

IF (LUN) IS AN OUTPUT DEVICE, SUCH AS THE PRINTER OR CARD PUNCH, THE INFORMATION ON (LUN) IS SENT TO THE PROPER OUTPUT DEVICE AT THIS TIME. A (LUN) WHICH HAS BEEN UNEQUIPPED, MAY NOW BE RE-DEFINED IN A NEW EQUIP STATEMENT. ANY LOGICAL UNIT NUMBERED BETWEEN 0 AND 99, INCLUSIVE, MAY BE UNEQUIPPED, EXCEPT THAT LOGICAL UNIT 61 MAY NOT BE UNEQUIPPED BY BATCH USERS.

THIS INSTRUCTION MAY BE USED WITHOUT DISRUPTING THE STATUS OF A PROGRAM WHICH HAS BEEN INTERRUPTED. THE PROGRAM MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF UNEQUIP COMMANDS ARE:

UNEQUIP,04[CR]

UNEQUIP,99[CR]

WEOF,(LUN),(LUN),...,(LUN)[CR]

THE WRITE END OF FILE COMMAND INSTRUCTS THE COMPUTER TO PLACE A FILE MARK ON EACH OF THE LOGICAL UNITS SPECIFIED. A FILE MARK ON A PRINTER WILL CAUSE A SKIP TO THE TOP OF THE NEXT PAGE. EACH OF THE LOGICAL UNITS LISTED MUST HAVE BEEN PREVIOUSLY DEFINED.

THIS COMMAND MAY BE GIVEN WITHOUT DISRUPTING THE STATUS OF AN INTERRUPTED PROGRAM. EXECUTION MAY BE RESUMED BY USING GO, IF DESIRED.

EXAMPLES OF WEOF COMMANDS ARE:

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WEOF,37,69,43[CR]
WEOF,76[CR]
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WFM,(LUN),(LUN),...,(LUN)[CR]

THIS IS AN ALTERNATE FORM OF THE WRITE END OF FILE COMMAND.

EXAMPLES OF WRITE FILE MARK COMMANDS ARE:

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WFM,45,93,01[CR]
WFM,1[CR]
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